

WHAT IS CLAIMED IS

1 1. A switching method, for use in a network including at least one WDM optical
2 path, comprising:
3 deriving a VLAN ID from a received packet;
4 deriving a wavelength ID value related to a carrier wavelength of the received
5 packet; and
6 using at least both the VLAN ID value and the wavelength ID value for making an
7 optical VLAN forwarding decision for the packet to provide a VLAN identifying capacity
8 greater than that provided solely by a VLAN ID carried by a frame.

1 2. The method of claim 1, including:
2 managing a forwarding database storing packet records including received and
3 forwarded values for VLAN ID, and carrier wavelength; and
4 said step of using further including searching the database for data forwarding
5 information, and forwarding the packet in response to a result of said searching.

1 3. The method of claim 1, including:
2 parsing a received packet and determining the presence of a valid VLAN ID field;
3 and
4 performing said two steps of deriving and said step of using only when there is a
5 valid VLAN ID field.

1 4. The method of claim 3, including:
2 managing a forwarding database storing packet records including received and
3 forwarded values for VLAN ID, and carrier wavelength; and
4 said step of using further including searching the database for data forwarding
5 information, and forwarding the packet in response to a result of said searching.

1 5. The method of claim 1, including:
2 parsing a received packet and determining the presence of a valid VLAN ID field;
3 determining if a set maximum VLAN ID capacity has been reached; and

4 performing said two steps of deriving and said step of using only when the maximum
5 VLAN ID capacity has been reached.

1 6. The method of claim 5, including:
2 managing a forwarding database storing packet records including received and
3 forwarded values for VLAN ID, and carrier wavelength; and
4 said step of using further including searching the database for data forwarding
5 information, and forwarding the packet in response to a result of said searching.

1 7. A computer readable media having computer readable data instructions that are
2 executable for physically implementing the method of claim 1.

1 8. A computer readable media having computer readable data instructions that are
2 executable for physically implementing the method of claim 2.

1 9. A signal traveling on a computer network and carrying computer readable
2 information to practice the method of claim 1.

1 10. A signal traveling on a computer network and carrying computer readable
2 information to practice the method of claim 2.

1 11. A network node switching device, comprising:
2 means for switching a received packet at least from or to WDM optical paths,
3 means for deriving a VLAN ID from the received packet;
4 means for assigning a wavelength ID to the packet; and
5 means for making a forwarding decision for the packet based upon at least both a
6 VLAN ID value and a wavelength ID value to provide a VLAN identifying capacity greater
7 than that provided solely by a VLAN ID carried by a frame.

1 12. The network node switching device of claim 11, wherein said means for
2 assigning performs its function only when a forwarding database indicates a threshold value
3 of used VLAN IDs has been reached.

1 13. The network node switching device of claim 11, wherein said means for
2 assigning performs its function only when a valid VLAN ID is present in the received packet.

1 14. The network node switching device of claim 11, further including:
2 means for managing a forwarding database storing packet records including received
3 and forwarded values for VLAN ID and carrier wavelength.

1 15. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame; comprising:

4 a port to receive the packet;

5 a port to forward the packet;

6 at least one of said ports having optical paths with WDM;

7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;

9 a computer; and

10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 1.

1 16. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame, comprising:

4 a port to receive the packet;

5 a port to forward the packet;

6 at least one of said ports having optical paths with WDM;

7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;

9 a computer; and

10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 2.

1 17. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame, comprising:

- 4 a port to receive the packet;
- 5 a port to forward the packet;
- 6 at least one of said ports having optical paths with WDM;
- 7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;
- 9 a computer; and
- 10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 3.

1 18. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame, comprising:

- 4 a port to receive the packet;
- 5 a port to forward the packet;
- 6 at least one of said ports having optical paths with WDM;
- 7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;
- 9 a computer; and
- 10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 4.

1 19. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame, comprising:

- 4 a port to receive the packet;
- 5 a port to forward the packet;
- 6 at least one of said ports having optical paths with WDM;
- 7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;
- 9 a computer; and

10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 5.

1 20. A switch for forwarding a packet having a header with a VLAN ID, for use in
2 controlling a link in a data transmission network to provide a VLAN identifying capacity
3 greater than that provided solely by a VLAN ID carried by a frame, comprising:
4 a port to receive the packet;
5 a port to forward the packet;
6 at least one of said ports having optical paths with WDM;
7 a parsing engine to derive a VLAN ID value based upon a VLAN field in the
8 received packet;
9 a computer; and
10 a computer readable media having computer readable data instructions that are
11 executable by said computer for physically implementing the method of claim 6.

1 21. A method of transmitting information, comprising:
2 receiving first and second VLAN (Virtual Local Area Network) tagged frames with both
3 frames having the same VLAN ID (Identification);
4 transmitting the first frame over an optical fiber with a first wavelength and of a
5 WDM (Wavelength Division Multiplexing) network; and
6 transmitting the second frame over the optical fiber with a second wavelength
7 different from the first wavelength and over the WDM (Wavelength Division Multiplexing)
8 network.